



***U.S. Air Force Operational Medicine: Using the  
Enterprise Estimating Supplies  
Program to Develop Materiel Solutions for the  
Air Force Optometry Augmentation Team (FFDOT)***

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## **Executive Summary**

The Naval Health Research Center (NHRC) has used its modeling and simulation expertise to develop and update conventional U.S. Air Force medical assets since 2004. Air Force medical modeling capabilities currently capture care and treatment of the sick and injured from the first responder through theater hospitalization.

The objective of this study was to leverage medical modeling and simulation advantages to provide recommendations for allowance standard (AS) configurations based on the Air Force Optometry Augmentation Team (FFDOT) operational and clinical requirements.

NHRC analysts reviewed the FFDOT, analyzed clinical requirements with subject matter experts, and used modeling and simulation tools to develop the operationally based and patient-driven recommended 917Q line list.

The Unit Type Code (UTC) capabilities, operational requirements, and materiel solutions were identified, and issues of modernization, clinical requirement, standardization, and redundancy were addressed. The overall changes resulted in a reduction in weight by 31%, cube by 22%, and cost by 4%, or \$9,500.

Modeling and simulating a medical system like the FFDOT, with a range of capabilities and functional areas, validates the materiel solutions for each UTC. It is effective in facilitating AS reviews that focus on advancing the mission, operational requirements, and capabilities of these agile, deployable medical resources.

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## Introduction

The Naval Health Research Center (NHRC) has used its modeling and simulation expertise to develop and update U.S. Air Force medical capabilities, allowance standards (ASs), and surgical subspecialty Unit Type Codes (UTCs) since 2004. Air Force medical units must remain small, light, and flexible. Based on the success of previous work, the Air Force asked NHRC to conduct a review of the Optometry Augmentation Team (FFDOT) (Konoske, 2009).

The U.S. Air Force Medical Services are faced with a wide range of potential scenarios, from providing warfighters forward resuscitative care to assisting civilian populations during humanitarian relief operations. Air Force planners and UTC developers have closely followed the *Joint Vision 2010* concept of providing highly mobile medical resources with a minimal logistic footprint, without compromising capability (Office of the Joint Chiefs of Staff, 1998). Additionally, guidance provided by the *Joint Vision 2020* calls for a more scientific approach that leverages and enhances existing information technologies to support modern operational capabilities (Office of the Joint Chiefs of Staff, 2000). Emphasis on mobility and capability resulted in a modular approach to prepare, plan, and deploy the FFDOT expeditionary medical platform.

## Method

The NHRC method of modeling medical supply requirements was developed to establish and/or review medical inventories for various levels of care. Its aim is to give clinicians, in the field, the materiel they need to provide the best care possible, while still maintaining as small a logistical footprint as possible. It involves a process that begins with the identification of likely patient types to be encountered by a particular type of medical treatment asset, including combat wounds, non-battle injuries, and illnesses. *International Classification of Diseases*, Ninth Revision (ICD-9) coded patient conditions, selected by the Defense Medical Materiel Program Office, are used for this purpose. Figure 1 depicts NHRC processes used when developing a modeling and simulation package.

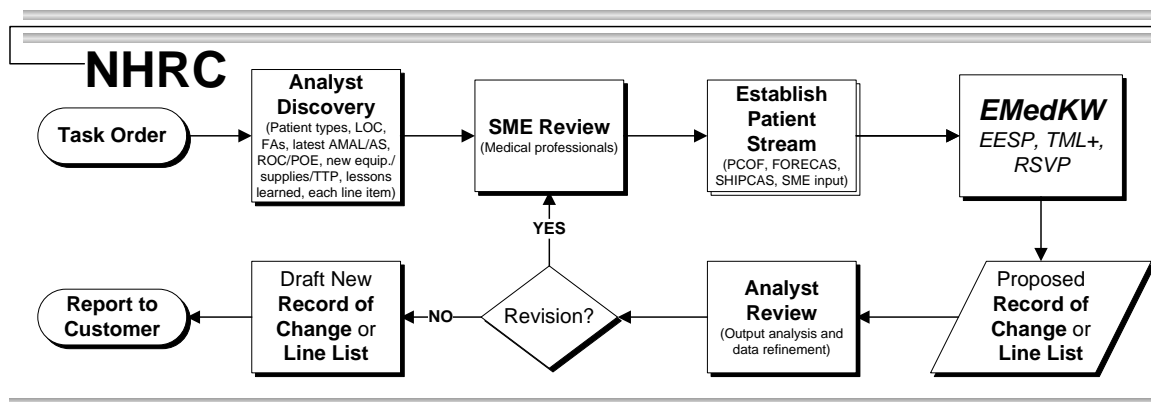


Figure 1. An example of the NHRC AS review process.

## Subject Matter Expert Guidance

A comprehensive review of the FFDOT AS 917Q was conducted to establish a baseline. The kick-off meeting was held December 9, 2009 via teleconference, with subsequent teleconferences and an on-site meeting held January 28, 2010, between NHRC researchers and subject matter experts (SMEs).

## Patient Stream

A 120-person patient stream, vetted by the optometry SME panel, was derived from theater patient encounter data for a 14-month period between Sept 2008 and December 2009. This data represents 1,547 patients seen over this period, with an average of 97 patients per month. The patient stream was used to simulate the equipment and supply requirements for a range of non-surgical injuries and illnesses that would typically be seen and treated by an optometrist and one technician working 12-hour days, 6 days per week, over a 30-day period. Table 1 describes the patient stream.

Table 1  
*FFDOT Patient Stream*

ICD-9	ICD-9 descriptions	No. pts
367	Disorders of refraction and accommodation	45
372	Disorders of conjunctiva	11
373	Inflammation of eyelids	11
918	Superficial injury of eye and adnexa	10
379	Other disorders of eye	9
370	Keratitis	6
V709	Unspecified general medical examination	5
346	Migraine	5
368	Visual disturbances	5
363	Chorioretinal inflammations, scars, and other disorders of choroid	3
364	Disorders of iris and ciliary body	3
940	Burn confined to eye and adnexa	3
076	Trachoma	1
365	Glaucoma	1
376	Disorders of the orbit	1



ICD-9	ICD-9 descriptions	No. pts
377	Disorders of optic nerve and visual pathways	1
<b>Total</b>		<b>120</b>

### Expeditionary Medical Knowledge Warehouse

The patient stream is input to the Expeditionary Medical Knowledge Warehouse (EMedKW) program to perform modeling and simulation. EMedKW is comprised of the Enterprise Estimating Supplies Program (EESP), the Tactical Medical Logistics (TML+) planning tool, and the ReSupply Validation Program (RSVP). EMedKW is a service-oriented architecture system designed to protect and organize medical data. EMedKW provides the ability to estimate the equipment and consumable items needed to treat a particular patient distribution, while also tracking inventory to monitor mission readiness. Within EMedKW, the tasks required to treat each PC code are identified and matched with the required equipment and consumable items. Review of the output informs the appropriate modifications to the 917Q line list for the Air Combat Command Manpower and Equipment Force Packaging System review.

The following example describes the EMedKW data structure (see Figure 2). The task profile shows the likely clinical tasks to be performed on this type of patient in that functional area, and the percentage of those patients expected to receive them. The “Equipment/supplies” column identifies the items needed to complete the “Insert endo-trach tube” task at that level of capability. Not shown in this figure are additional data fields used to calculate supply quantities, including the amount of each supply needed to complete the task, how often the task will be repeated in the first 24 hours of treatment, how often the task will be repeated in each subsequent 24-hour period, and the average length of stay at that facility.

ICD-9 code	Medical capability	Functional area	Task profile	Patients %	Equipment/supplies
800.13	Emergency forward care	Triage/pre-op	Triage	100	Laryngoscope INF/ADL w/ 4 detachable blades Tube trach endotrach double lumen left 39 Fr Forceps trach McGill fenestrated Lubricant surgical 5 gram 144S Vecuronium bromide inj 10mg/ml 10ml vial Basin emesis plastic disp., 250S Gloves patient exam large 100s Syringe hypodermic 3ml Luer Lock 100s Needle hypodermic 20ga 1.43–1.56 Luer Lock, 100S Pad isopropyl impregnated, 200S
800.26		O.R.	Patient assessment	30	
800.42	Forward resuscitative care	Ward/ICU	Insert endo-trach tube	100	
800.60		Radiology	Neuro checks	60	
801.01	Theater hospitalization	Lab	Apply c-collar	20	
850.1	Definitive care	Pharmacy	Set-up O2	20	
850.9			Admin O2	100	
-			Cardiac monitoring	80	
-			CPR	100	
870.4			Emergency control hemorrhage		

Figure 2. An example of NHRC’s programmatic modeling process using a patient ICD-9 Code 800.13.

## Capability

The FFDOT AS is used by optometrists as a component of the Aerospace Medical Contingency Ground Support System or with an EMEDS +25. This UTC is capable of supporting deployed medical commanders in wartime, small-scale contingencies, humanitarian assistance, and domestic disaster response.

Additionally, the FFDOT provides personnel and equipment for primary eye care services including refractions, diagnostic evaluations, muscle balance testing, measurement of intraocular pressure, treatment and management of ocular disease and acute ocular injuries, co-management of ocular surgery, and stabilization of advanced ocular trauma for aeromedical evacuation. Staffing consists of an optometrist (42E3) and an optometric technician (4V071).

## Results

### Change Justification

Changes to the AS are categorized as modernization, clinical requirements, standardization, and redundancy. There are a total of 19 items recommended for deletion, and nine of these items are recommended for deletion without replacement. Additionally, four line items are recommended for addition; bead laboratory glass, plastic bags, and battery sizes “C” and “D.” There were a total of 49 line-item changes. A detailed listing of the 917Q AS recommended changes is provided in Appendix A.

### Quantity Changes

Due to clinical requirements, two equipment line items are recommended for deletion without replacement, due to clinical requirements; forceps and a lacrimal probe. One item recommended for addition is bead laboratory glass for use with the plastic spectacle warmer. The overall weight for equipment is increased by less than 1%, cube by .2%, and cost decreased by .03% (or \$23).

Ten medications currently in the 917Q AS would be drawn from the EMEDS 938 AS pharmacy. Optimizing medications from the EMEDS 938 pharmacy reduces the weight by 73%, cube by 57%, and cost by 62%, (or \$7,100). Several medication quantities were changed based on the requirements of the patient stream simulation. For example, acetazolamide tablets were reduced from 24 bottles of 100 to three bottles, homatropine solution was reduced from 72 bottles to 13 bottles, and hydroxypropyl solution from 50 bottles to one bottle.

Consumables drawn from the 938 AS will decrease the overall weight by 82%, cube by 74%, and cost by 74%, (or \$2,300). Five line items are recommended for deletion, such as cover personnel, skin cleanser, and tape pressure. Other recommended deletions from the 917Q AS can be drawn from the EMEDS 938 AS, like alcohol pads, eye pads, exam gloves, and wood applicators.

Durables consist of four line items. Battery sizes “C” and “D” are recommended additions for use with the Welch Allen handle and the lensmeter. There was an insignificant change in weight, cube, and cost.



The overall changes resulted in a reduction in weight by 31%, cube by 28%, and cost by 11%, or \$9,500. Table 2 is an overview of changes by category. Appendix B shows an aggregated line items listing from the 938 EMEDS AS.

Table 2  
*FFDOT Weight, Cube, and Cost*

Category	Weight (lbs)	Cube (cf)	Cost
AS-917Q Equipment	603.64	115.48	\$75,249.61
EESP Equipment	608.32	115.72	\$75,226.24
Difference	4.68	0.24	-\$23.37
% Change	0.78	0.21	-0.03
AS-917Q Medicine	161.19	64.37	\$11,529.96
EESP Medicine	42.40	27.88	\$4,416.87
Difference	-118.80	-36.49	-\$7,113.09
% Change	-73.70	-56.69	-61.69
AS-917Q Consumable	252.57	30.87	\$3,174.55
EESP Consumable	44.45	7.91	\$831.69
Difference	-208.12	-22.96	-\$2,342.86
% Change	-82.40	-27.52	11.75
AS-917Q Durable	3.35	0.52	\$21.51
EESP Durable	5.30	0.52	\$20.92
Difference	1.95	0.00	-\$0.59
% Change	58.27	0.00	-2.74
AS-917Q Totals	1020.76	211.24	\$89,975.63
EESP Totals	700.47	152.03	\$80,495.72
Difference	-320.28	-59.21	-\$9,479.91
% Change	-31.38	-21.95	-4.24

## Conclusion

Modeling and simulation was used to study the FFDOT and recommend changes to its AS. The clinical capabilities include personnel and equipment required to establish medical and surgical eye care support for a deployed medical facility. The FFDOT is capable of augmenting an Aerospace Medical Contingency Ground Support System increment but can be utilized in an EMEDS +25.

Modeling and simulation tools are essential for projecting appropriate medical care needs for our service personnel. Standardizing equipment and consumables with the Defense Medical Materiel Program Office-approved items makes the FFDOT review more efficient. Updating and

maintaining the patient data and FFDOT contents database will ensure that future medical needs are met in the most effective manner.

### References

- Konoske, P. (2009). *Statement of Work FY10: Using the Naval Health Research Center's Medical Planning Applications to Review or Validate Air Force Medical Requirements and Capabilities*. San Diego, CA: Naval Health Research Center.
- Office of the Joint Chiefs of Staff. (1998). *Joint Vision 2010*. Washington, DC: Department of Defense.
- Office of the Joint Chiefs of Staff. (2000). *Joint Vision 2020*. Washington, DC: Department of Defense.

**Appendix A.**  
FFDOT Line List

Status	NSN	Supply Description	UI	AS qty.	EESP qty	AS 917Q wt (lbs)	AS 917Q cube (cf)	AS 917Q cost	EESP wt (lbs)	EESP cube (cf)	EESP cost
<b>Equipment</b>											
A	7520002855416	BASKET WASTEPAPER	EA	2	2	6.00	4.00	\$19.40	6.00	4.00	\$19.40
F	6640002999818	BEAD LABORATORY GLASS 5LB	EA	0	1	0.00	0.00	\$0.00	5.00	0.25	\$17.72
A	6515NCM040204	BULB REPLACEMENT F/RETIN	EA	1	1	0.10	0.10	\$27.00	0.10	0.10	\$27.00
A	6515NCM040203	BULB REPLACEMENT F/HALOG	EA	1	1	0.10	0.10	\$27.00	0.10	0.10	\$27.00
A	6540014599272	BULB SLIT LAMP OPHTHALMIC USED WITH 6540014599226 LAMP SLIT OPHT	EA	1	1	0.55	0.11	\$104.33	0.55	0.11	\$104.33
A	6515013561757	BUR REMOVER RUST RING 5MM REPLACEMENT F/ALGERBRUSH MDL E0819A&B	EA	1	1	0.01	0.01	\$104.75	0.01	0.01	\$104.75
A	6540014624696	CASE CARRYING REFRACTOR AND KERATOMETER E.I. 6540014624634	EA	1	1	1.25	0.25	\$249.95	1.25	0.25	\$249.95
A	6515015034315	CASE PHOROPTOR & ARM HEAVY DUTY F/MORRELL	EA	1	1	15.00	3.20	\$1,061.02	15.00	3.20	\$1,061.02
A	6515015034319	CASE PHOROPTOR TRIPOD MORRELL WHITE	EA	1	1	15.00	2.50	\$1,303.46	15.00	2.50	\$1,303.46
A	6540014599279	CASE SLIT LAMP OPHTHALMIC W/6540014599226	EA	1	1	10.00	1.72	\$227.49	10.00	1.72	\$227.49
A	7105002698463	CHAIR FOLDING W/O ARMS STEEL GRAY ENAMEL	EA	4	4	20.00	4.00	\$51.64	20.00	4.00	\$51.64
A	6540010793516	CHART AMSLER RECORD 50 CHARTS	PG	1	1	0.30	0.10	\$3.75	0.30	0.10	\$3.75
A	6540005988078	CHART SET VISION ACUITY TEST DISTANCE VISION	SE	1	1	3.19	0.14	\$12.53	3.19	0.14	\$12.53
A	6540005988077	CHART SET VISION ACUITY TEST NEAR VISION	SE	1	1	0.06	0.00	\$18.10	0.06	0.00	\$18.10
A	7035NCM071333	COMPUTER LAPTOP CLIENT	EA	1	1	5.00	0.50	\$4,016.00	5.00	0.50	\$4,016.00
A	6540014863725	DEPTH PERCEPTION APPARATUS OPHTHALMIC	EA	1	1	0.55	0.12	\$205.76	0.55	0.12	\$205.76
A	6540014624614	EXOPHTHALMOMETER PRISM HERTEL TYPE	EA	1	1	0.79	0.04	\$332.81	0.79	0.04	\$332.81

*Note.* A = quantity unchanged; B = quantity increase; C = quantity decrease; D = delete; E = add, deleted replacement item; F = add new item

Status	NSN	Supply Description	UI	AS qty.	EESP qty	AS 917Q wt (lbs)	AS 917Q cube (cf)	AS 917Q cost	EESP wt (lbs)	EESP cube (cf)	EESP cost
A	6515014628863	FIBER OPTIC LIGHT SYSTEM	EA	1	1	9.50	0.14	\$1,786.94	9.50	0.14	\$1,786.94
D	6515011151736	FORCEPS EYE SUTURE STR FLEX 4.125IN FINE POINTS PASSIVATED	EA	1	0	0.01	0.01	\$26.89	0.00	0.00	\$0.00
A	6540003462240	FRAME OPHTHALMIC TRIAL LENS SET W/CORNEAL SIGHTING DEVICE	EA	1	1	0.18	0.10	\$322.29	0.18	0.10	\$322.29
A	6540014618942	HANDLE RECHARGEABLE WELCH ALLYN 3.5V OUTLET TYPE	EA	1	1	1.15	0.15	\$133.15	1.15	0.15	\$133.15
A	6515NCM040201	LA FORCE FOREIGN BODY SPUD	EA	1	1	0.10	0.10	\$25.00	0.10	0.10	\$25.00
A	6540010787124	LENS CONDENSING 20 DIOPTR ASPHERICAL EXAM OF OCULAR FUNDUS	EA	1	1	0.05	0.01	\$221.70	0.05	0.01	\$221.70
A	6540015131948	LENS CONDENSING INDIRECT 90D CLEAR 21.5MM DIAMETER NON-CONTACT	EA	1	1	0.55	0.12	\$333.27	0.55	0.12	\$333.27
A	6540010784164	LENS CONTACT 3-MIRROR GOLDMANN SMALL	EA	1	1	0.01	0.01	\$311.54	0.01	0.01	\$311.54
A	6540003462800	LENS DIPLOPIA TEST RED PLASTIC WITH HANDLE	EA	1	1	0.08	0.01	\$7.80	0.08	0.01	\$7.80
A	6540010567377	LENS SET TRIAL OPHTHALMIC REFRACTION SET WITHOUT RETINOSCOPE	SE	1	1	7.12	8.00	\$4,565.31	7.12	8.00	\$4,565.31
A	6540014624703	LENSMETER COMPACT AC/DC	EA	1	1	0.25	0.01	\$1,503.19	0.25	0.01	\$1,503.19
A	6230000885200	LIGHT DESK	EA	1	1	1.70	0.40	\$23.52	1.70	0.40	\$23.52
A	6530004808286	LIGHT DIAGNOSTIC EXAMINATION BURTON TYPE HAND	EA	1	1	3.25	0.34	\$524.45	3.25	0.34	\$524.45
A	6540014623977	LIGHT SOURCE AUXILIARY HI INTENSITY NON-COAXIAL MAIN POWER OR12V	EA	1	1	1.25	0.25	\$760.73	1.25	0.25	\$760.73
A	1670009962780	NET CARGO TIE DOWN 5.5FTX14.5	EA	2	2	40.00	10.00	\$284.00	40.00	10.00	\$284.00
A	1670009694103	NET CARGO TIE DOWN 96IN HT 10,000LB CAP	EA	1	1	20.00	5.00	\$142.00	20.00	5.00	\$142.00
A	6540011397611	OCCLUDER EYE PLASTIC 7 IN DOUBLE-ENDED COMBINATION PIN HOLE	EA	1	1	0.01	0.01	\$41.30	0.01	0.01	\$41.30

Note. A = quantity unchanged; B = quantity increase; C = quantity decrease; D = delete; E = add, deleted replacement item; F = add new item

Status	NSN	Supply Description	UI	AS qty.	EESP qty	AS 917Q wt (lbs)	AS 917Q cube (cf)	AS 917Q cost	EESP wt (lbs)	EESP cube (cf)	EESP cost
A	6540014142056	OPHTHALMOSCOPE COAXIAL HALOGEN 16 APERATURES	EA	1	1	1.15	0.20	\$255.31	1.15	0.20	\$255.31
A	6540014624726	OPHTHALMOSCOPE HEINE SIGMA 150 SPECTACLE MOUNTED INDIRECT	EA	1	1	1.15	0.15	\$1,552.60	1.15	0.15	\$1,552.60
A	1670008204896	PALLET CARGO AIRCRAFT 108INX88IN	EA	1	1	200.00	9.00	\$856.96	200.00	9.00	\$856.96
A	6540008776464	PHOROPTER MINUS CYLINDRICAL LENS TYPE	EA	1	1	8.50	1.10	\$4,774.92	8.50	1.10	\$4,774.92
A	6540002998186	PLATE SET PSEUDOISCHROMATIC PLATE QUANTITY 14 4.5IN	SE	1	1	1.34	0.10	\$186.43	1.34	0.10	\$186.43
A	6540003566050	PRISM BAR OPHTHALMOL BERENS HORIZONTAL IMAGE DISPLACE 15 PRISMS	EA	1	1	0.56	0.14	\$142.00	0.56	0.14	\$142.00
A	6540003566000	PRISM BAR OPHTHALMOL BERENS VERTICAL IMAGE DISPLACE 14 PRISMS	EA	1	1	0.53	0.14	\$140.55	0.53	0.14	\$140.55
D	6515005261259	PROBE LACHRYMAL BOWMAN STERLING SILVER SZ 00	EA	1	0	0.31	0.00	\$14.20	0.00	0.00	\$0.00
A	6540012317252	RACK LENS SKIASCOPIC CONTAINS 2 RACKS:1PLUS1MINUS6 25MM LENS/RAK	SE	1	1	1.00	0.05	\$304.29	1.00	0.05	\$304.29
A	6540014624634	REFRACTOR AND KERATOMETER AUTOMATIC RETINOMAX K-PLUS HAND-HELD	EA	1	1	0.15	0.01	\$36,400.72	0.15	0.01	\$36,400.72
A	6540014559258	RETINOSCOPE 3.5V STREAK EXTERNAL FOCUSING SLEEVE HALOGEN	EA	1	1	1.00	0.03	\$498.18	1.00	0.03	\$498.18
A	6515014605954	RETRACTOR EYELID	EA	2	2	0.70	0.22	\$65.26	0.70	0.22	\$65.26
A	8340NCM060739	ROPAK CONTAINER LID 40X48	EA	3	3	15.00	3.00	\$112.02	15.00	3.00	\$112.02
A	8340NCM020030	ROPAK CONTAINER TWO DROP DOORS 84	EA	3	3	75.00	45.00	\$735.00	75.00	45.00	\$735.00
A	6540011654987	RULER MEASURING PUPILLARY DISTANCE 6X.50IN	EA	1	1	0.10	0.02	\$0.88	0.10	0.02	\$0.88
A	6540014599226	SLIT LAMP OPHTHALMIC	EA	1	1	3.00	0.88	\$5,810.49	3.00	0.88	\$5,810.49
A	6540015053800	STAND TRIPOD FOR PHOROPTER	EA	1	1	25.00	2.80	\$925.33	25.00	2.80	\$925.33

Note. A = quantity unchanged; B = quantity increase; C = quantity decrease; D = delete; E = add, deleted replacement item; F = add new item



Status	NSN	Supply Description	UI	AS qty.	EESP qty	AS 917Q wt (lbs)	AS 917Q cube (cf)	AS 917Q cost	EESP wt (lbs)	EESP cube (cf)	EESP cost
A	6530014979938	STOOL EXAMINATION 18-24.5INX15IN 4LEG ADJ W/FOOT RING	EA	2	2	7.70	4.00	\$453.08	7.70	4.00	\$453.08
A	7105002699275	TABLE FOLDING TENT OD 35X27X23IN	EA	2	2	88.00	6.00	\$635.14	88.00	6.00	\$635.14
A	6540014587838	TONOMETER OPHTHALMIC HAND HELD PORTABLE POCKE	EA	1	1	1.00	0.02	\$1,834.00	1.00	0.02	\$1,834.00
A	6540011458776	TOOL KIT OPTICIAN	SE	1	1	4.00	0.12	\$282.56	4.00	0.12	\$282.56
A	6540014618991	TRANSILLUMINATOR HE WELCH ALLYN 3.5 VOLT FINNOFF	EA	1	1	1.15	0.15	\$144.76	1.15	0.15	\$144.76
A	6540002999590	WARMER PLASTIC SPECTACLE FRAME 115 VOLT 60 HERTZ AC 100 WATTS	EA	1	1	4.19	0.80	\$346.86	4.19	0.80	\$346.86
<b>Medications</b>											
C	6505006640857	ACETAZOLAMIDE TABLETS USP 250MG 100S	BT	24	3	4.80	19.44	\$235.44	0.60	2.43	\$29.43
C	6505013463066	APRACLOINIDINE HYDROCHLORIDE OPHTHALMIC SOLUTION 0.1ML 24S	PG	3	0	3.75	0.04	\$829.41	0.00	0.00	\$0.00
D	6505009617486	ARTIFICIAL TEARS 15 ML	BT	36	0	3.60	3.60	\$57.96	0.00	0.00	\$0.00
D	6505005824735	ATROPINE SULFATE OPHTHALMIC SOL 1% 15ML BT	BT	24	0	1.92	0.10	\$85.68	0.00	0.00	\$0.00
A	6505005824190	BACITRACIN OPHTHALMIC OINT 0.125OZ TU	TU	24	24	0.72	19.55	\$145.44	0.72	19.55	\$145.44
C	6505013396922	CONTACT LENS SALINE SOLUTION 12FL OZ BOTTLE	BT	12	5	18.00	0.36	\$45.96	7.50	0.15	\$19.15
C	6505002999666	CYCLOPENTOLAT HYDROCH OPHTH SOLUTION 1% 15ML	BT	6	5	0.60	0.60	\$6.60	0.50	0.50	\$5.50
D	6505011534335	DOXYCYCLINE HYCLATE TAB 100MG 500S	BT	2	0	0.62	0.20	\$101.10	0.00	0.00	\$0.00
D	6505015032390	FLUORESCIN SODIUM OPHTHALMIC STRIPS 1MG 100S	PG	3	0	0.30	0.30	\$30.42	0.00	0.00	\$0.00
C	6505007644011	HOMATROPINE HYDROBROMIDE OPHTH SOLUTION 5ML	BT	72	13	2.16	7.20	\$1,173.60	0.39	1.30	\$211.90
C	6505011472082	HYDROXYPROPYL METHYLCELLULOSE OPHTHALMIC	BT	50	1	3.00	0.50	\$326.00	0.06	0.01	\$6.52

Note. A = quantity unchanged; B = quantity increase; C = quantity decrease; D = delete; E = add, deleted replacement item; F = add new item

Status	NSN	Supply Description	UI	AS qty.	EESP qty	AS 917Q wt (lbs)	AS 917Q cube (cf)	AS 917Q cost	EESP wt (lbs)	EESP cube (cf)	EESP cost
		SOLUTION USP 15ML BT									
C	6505013850495	KETOROLAC TROMETHAMINE OPTHALMIC SOLUTION 5ML	BT	24	4	0.79	0.24	\$1,406.64	0.13	0.04	\$234.44
C	6505014407641	LATANOPROST SOLUTION 50 MG/ML 2.5 ML	BT	6	1	0.06	0.06	\$201.60	0.01	0.01	\$33.60
C	6505014308715	LODOXAMIDE TROMETHAMINE OPTHALMIC SOLUTION 10 ML	BT	24	4	2.64	0.24	\$2,136.72	0.44	0.04	\$356.12
D	6505015090677	MOXIFLOX OPTHAAHLORIDE 5MG/ML 0.5% 3ML	BT	4	0	0.40	0.40	\$508.04	0.00	0.00	\$0.00
D	6505015331574	NAPHAZOLINE HCL&PHENIRAMINE MAL OPHT SOL 15ML	BT	24	25	2.40	2.40	\$322.56	2.50	2.50	\$336.00
C	6505011434642	NEOMYCIN&POLYMYXIN B SULFATES&DEXAMETHASONE OPTH OINT USP 3.5GM	TU	24	13	0.72	0.24	\$1,601.52	0.39	0.13	\$867.49
C	6505011197693	OPHTHALMIC IRRIGATING SOL 15-18ML BT 36S	PG	6	2	13.28	1.02	\$366.18	4.43	0.34	\$122.06
D	6505011197694	OPHTHALMIC IRRIGATING SOLUTION 500ML BOTTLE W/HANGING DEVICE 6S	PG	6	0	76.38	6.00	\$183.60	0.00	0.00	\$0.00
B	6505002719220	PHENYLEPHRINE HCL OPTHALMIC SOL 25% 15 ML	BT	6	31	0.42	0.01	\$93.42	2.17	0.06	\$482.67
D	6505005824679	PILOCARPINE HYDROCHLORIDE OPTHALMIC SOLUTION USP 2% 15 ML	BT	3	0	0.39	0.03	\$6.51	0.00	0.00	\$0.00
A	6505013200234	POLYMYXIN B SULFATE/TMP OPTH SOL 10ML	BT	24	24	21.12	0.24	\$535.44	21.12	0.24	\$535.44
B	6505012935688	PREDNISOLONE ACETATE AND GENTAMICIN SULFATE OPTHALMIC SUSP 5ML	BT	24	39	0.24	0.24	\$559.44	0.39	0.39	\$909.09
D	6505001335843	PREDNISOLONE ACETATE OPTHALMIC 1% 5 ML	BT	2	0	0.20	0.20	\$49.54	0.00	0.00	\$0.00
C	6505007539902	PROPARACAINE HCL OPTHALMIC SOL	BT	6	5	0.72	0.04	\$21.42	0.60	0.03	\$17.85

Note. A = quantity unchanged; B = quantity increase; C = quantity decrease; D = delete; E = add, deleted replacement item; F = add new item

Status	NSN	Supply Description	UI	AS qty.	EESP qty	AS 917Q wt (lbs)	AS 917Q cube (cf)	AS 917Q cost	EESP wt (lbs)	EESP cube (cf)	EESP cost
D	6505005824737	TETRACAINE HYDROCH OPTH SOLUTION 0.5% 15 ML	BT	5	0	1.00	0.73	\$9.25	0.00	0.00	\$0.00
C	6505010696519	TIMOLOL MALEATE OPTHALMIC SOLUTION 5ML	BT	3	1	0.30	0.30	\$4.23	0.10	0.10	\$1.41
C	6505011428314	TRIFLURIDINE OPTHALMIC SOL 1% BT 7.5ML	BT	6	1	0.30	0.04	\$453.66	0.05	0.01	\$75.61
C	6505008718289	TROPICAMIDE OPTHALMIC SOLUTION USP 1% 15 ML	BT	6	5	0.36	0.06	\$32.58	0.30	0.05	\$27.15
<b>Consumables</b>											
D	6515009051473	APPLICATOR PLAS/WOOD ROD 6IN STER 2000S	PG	1	0	0.65	0.65	\$41.18	0.00	0.00	\$0.00
D	8105011958730	BAG PLASTIC 10GAL 250S	BX	12	0	180.00	13.80	\$205.92	0.00	0.00	\$0.00
E	8105005798451	BAG PLASTIC 38X36IN PLASHEAT SEAL 25LB 100S	PG	1	1	0.00	0.00	\$0.00	3.00	1.00	\$14.72
C	6540NCM040202	CASE CONTACT LENS 40S	PG	3	1	3.00	0.60	\$21.00	1.00	0.20	\$7.00
D	8465009997905	COVER PERSONNEL IDENTIFICATION TAG	EA	12	0	0.12	0.12	\$2.64	0.00	0.00	\$0.00
C	6540011071733	FRAME SPECTACLE B15 SADDLE BRIDGES-10 52MM DIA 25MM BRIDGE BLACK	EA	12	6	0.60	0.24	\$126.12	0.30	0.12	\$63.06
B	6540010992321	FRAME SPECTACLE BAYONET TEMPLES 42 BY 52 EYE 20 BRIDGE	EA	1	6	0.04	0.06	\$7.68	0.24	0.36	\$46.08
A	6540011070304	FRAME SPECTACLE NYLON NON-REFLECTIVE 46MM DIAMETER 22MM BRIDGE	EA	6	6	0.30	0.12	\$39.66	0.30	0.12	\$39.66
A	6540011070305	FRAME SPECTACLE NYLON NON-REFLECTIVE 48MM DIAMETER 22MM BRIDGE	EA	6	6	0.30	0.12	\$39.66	0.30	0.12	\$39.66
A	6540011074510	FRAME SPECTACLE NYLON NON-REFLECTIVE 48MM DIAMETER 24MM BRIDGE	EA	6	6	0.30	0.12	\$62.40	0.30	0.12	\$62.40
C	6540011071732	FRAME SPECTACLE NYLON NON-REFLECTIVE 50MM DIAMETER 25MM BRIDGE	EA	12	6	0.60	0.24	\$90.36	0.30	0.12	\$45.18

Note. A = quantity unchanged; B = quantity increase; C = quantity decrease; D = delete; E = add, deleted replacement item; F = add new item

Status	NSN	Supply Description	UI	AS qty.	EESP qty	AS 917Q wt (lbs)	AS 917Q cube (cf)	AS 917Q cost	EESP wt (lbs)	EESP cube (cf)	EESP cost
A	6540011074509	FRAME SPECTACLE NYLON NON-REFLECTIVE 52MM DIAMETER 22MM BRIDGE	EA	6	6	0.30	0.12	\$43.98	0.30	0.12	\$43.98
D	6515014618933	GLOVE PATIENT EXAM 9.5IN N-DEX NITR MED 100S	PG	5	0	6.65	0.85	\$86.15	0.00	0.00	\$0.00
D	6515015199172	GLOVE PATIENT EXAM M NON STER PWD FREE 100S	PG	3	0	3.00	0.38	\$20.97	0.00	0.00	\$0.00
D	6515014915719	GLOVE PATIENT EXAM PURPLE SZ 10 LARGE 100S	PG	10	0	2.90	2.70	\$170.00	0.00	0.00	\$0.00
D	6510011077575	PAD EYE COTTON GAUZE 2.5X2IN 50S	PG	1	0	0.47	1.00	\$10.43	0.00	0.00	\$0.00
D	6510007863736	PAD ISOPROPYL ALCOHOL IMPREGNATED WHITE 200S	PG	4	0	4.00	0.40	\$11.60	0.00	0.00	\$0.00
C	6515014491016	SHIELD EYE SURG FOX ALUM 3X2IN 12S	PG	12	1	3.60	3.60	\$348.00	0.30	0.30	\$29.00
C	6508014598510	SKIN CLEANSER ALCOHOL AEROSAL FOAM WATERLESS 5.4OZ CAN 12S	PG	12	2	4.20	1.32	\$1,569.12	0.70	0.22	\$261.52
D	6508013780530	SKIN CLEANSER MEDICATED 15S	PG	1	0	1.35	0.04	\$4.17	0.00	0.00	\$0.00
C	6540010602964	SPECTACLES POST MYDRIATIC DISPOSABLE PLASTIC W/ADJ TEMPLES100S	PG	6	2	10.80	0.84	\$147.78	3.60	0.28	\$49.26
B	6540013881302	STRAP SPECTACLE FRAME SELF-ADJUSTING RUBBER BLACK R&L 10-11IN	EA	1	6	0.01	0.18	\$5.72	0.06	1.08	\$34.32
D	6510009268882	TAPE ADHESIVE SURG POROUS WOVEN 1INX10YD 12S	PG	2	0	2.08	0.08	\$35.14	0.00	0.00	\$0.00
D	7510000797906	TAPE PRESSURE SENSITIVE ADHESIVE	RO	3	0	0.30	0.30	\$8.19	0.00	0.00	\$0.00
B	8540002818360	TISSUE FACIAL 24X36IN WHITE 200/BX 6S	PG	12	15	27.00	3.00	\$76.68	33.75	3.75	\$95.85
<b>Durables</b>											
F	6135009857846	BATTERY NONRECHARGEABLE 1.5V CELL C 12S	PG	0	1	0.00	0.00	\$0.00	1.85	0.10	\$7.76

Note. A = quantity unchanged; B = quantity increase; C = quantity decrease; D = delete; E = add, deleted replacement item; F = add new item

Status	NSN	Supply Description	UI	AS qty.	EESP qty	AS 917Q wt (lbs)	AS 917Q cube (cf)	AS 917Q cost	EESP wt (lbs)	EESP cube (cf)	EESP cost
F	6135014468310	BATTERY NONRECHARGEABLE D 4S	PG	0	1	0.00	0.00	\$0.00	0.50	0.10	\$4.59
A	6230015179944	FLASHLIGHT EXAM DISPOSABLE 10S	EA	1	1	2.75	0.22	\$2.10	2.75	0.22	\$2.10
C	7520013323967	PEN BALL-POINT	PG	3	1	0.60	0.30	\$19.41	0.20	0.10	\$6.47

*Note.* A = quantity unchanged; B = quantity increase; C = quantity decrease; D = delete; E = add, deleted replacement item; F = add new item

**Appendix B.**  
FFDOT Aggregated Line Items from the 938 EMEDS AS

NSN	Supply description	UI	938AS	Total qty (UI)	Total wt (lbs)	Total cube (cf)	Total cost
6135009857846	BATTERY NONRECHARGEABLE 1.5V CELL C 12S	PG	938BK	1	1.852	0.100	\$7.76
6505001335843	PREDNISOLONE ACETATE OPTHALMIC 1% 5 ML	BT	938BE	2	0.200	0.200	\$49.54
6505005824737	TETRACAINE HYDROCH OPTH SOLUTION 0.5% 15 ML	BT	938BE	9	1.800	1.314	\$16.65
6505009617486	ARTIFICIAL TEARS 15 ML	BT	938BE	80	8.000	8.000	\$128.80
6505009857301	ACETAMINOPHEN TAB 0.325GM 1000S	BT	938BE	1	0.920	0.100	\$7.30
6505011534335	DOXYCYCLINE HYCLATE TAB 100MG 500S	BT	938BE	4	1.244	0.400	\$202.20
6505012149062	IBUPROFEN TAB 800 MG 500S	BT	938BE	1	1.426	0.100	\$124.26
6505015032390	FLUORESCEIN SODIUM OPTHALMIC STRIPS 1MG 100S	PG	938BE	1	0.100	0.100	\$10.14
6505015090677	MOXIFLOX OPTHALHLORIDE 5MG/ML 0.5% 3ML	BT	938BE	27	2.700	2.700	\$3,429.27
6505015331574	NAPHAZOLINE HCL&PHENIRAMINE MAL OPHT SOL 15ML	BT	938BE	57	5.700	5.700	\$766.08
6510007863736	PAD ISOPROPYL ALCOHOL IMPREGNATED WHITE 200S	PG	938BK	1	1.000	0.100	\$2.90
6510009268882	TAPE ADHESIVE SURG POROUS WOVEN 1INX10YD 12S	PG	938BK	1	1.040	0.040	\$17.57
6510011077575	PAD EYE COTTON GAUZE 2.5X2IN 50S	PG	938AA	1	0.470	1.000	\$10.43
6515009051473	APPLICATOR PLAS/WOOD ROD 6IN STER 2000S	PG	938BF	1	0.650	0.650	\$41.18
6515014618933	GLOVE PATIENT EXAM 9.5IN N-DEX NITR MED 100S	PG	938BK	5	6.650	0.850	\$86.15



<b>NSN</b>	<b>Supply description</b>	<b>UI</b>	<b>938AS</b>	<b>Total qty (UI)</b>	<b>Total wt (lbs)</b>	<b>Total cube (cf)</b>	<b>Total cost</b>
6515014915719	GLOVE PATIENT EXAM PURPLE SZ 10 LARGE 100S	PG	938BK	5	1.450	1.350	\$85.00
8105005798451	BAG PLASTIC 38X36IN PLASHEAT SEAL 25LB 100S	PG	938BM	1	3.000	1.000	\$14.72

## REPORT DOCUMENTATION PAGE

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<b>14. ABSTRACT</b> <p>The Naval Health Research Center (NHRC) has used its modeling and simulation (M&amp;S) expertise to develop and update conventional U.S. Air Force medical assets since 2004. This study leveraged medical M&amp;S to provide recommendations for allowance standard configurations for the Air Force Optometry Augmentation Team (FFDOT) operational and clinical requirements. The result is an operationally based and patient-driven recommended 917Q line list.</p> <p>Unit Type Code capabilities, operational requirements, and materiel solutions were identified, and issues of modernization, clinical requirement, standardization, and redundancy were addressed. Total changes resulted in a reduction in weight by 31%, cube by 22%, and cost by 4%, or \$9,500.</p>						
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